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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,976	05/22/2006	Youngchul Park	33082M295	1618

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EXAMINER	
ADAMS, BRET W	

ART UNIT	PAPER NUMBER
2855	

MAIL DATE	DELIVERY MODE
07/01/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/561,976	PARK ET AL.	
	Examiner	Art Unit	
	BRET ADAMS	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,6,7,9,21 and 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6,7,21 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/9/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 8-10, 13-14, 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki (US PG Pub 2002/0014483 A1).

3. Claims 1, 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki (US PG Pub 2002/0014483 A1).

4. Regarding claims 1 and 9, Suzuki teaches a calibration method for a heat treatment apparatus that performs a heat treatment on process objects comprising a processing vessel (2) for accommodating process objects (W), a plurality of heaters (3) and a plurality of temperature sensors (S_{in}, S_{out}, Swc, and Swe). The heat treatment apparatus stores a thermal model in a model storing part (111) based on the outputs of the temperature sensors. The apparatus estimates the temperature of the process object in the vessel based on outputs of the temperature sensors, and controls the heaters based on the estimated temperature (refer to col. 6 lines 55-60). The processing vessel, in operation, compares temperatures according to the thermal model and the actual measurements, and provides a correction value so that the difference between the estimated values and the actual measured temperatures is a minimum (col. 9, lines 12-29 where during the calibrating process, it is described that when the

estimated temperature calculated from the thermal model and actual temperature read from the temperature sensors are different, the difference between the calculated and actual temperatures is minimized using the least squares method, which has terms broadly interpretable as correction values used to minimize difference between the fit and the actual data). During the calibration process, temperature sensors (Swc and Swe) are arranged adjacent to the process objects (W), enabling the measurement of the process objects' temperatures (col. 10, lines 42-54). When heating the processing vessel, the heaters sequentially set the interior of the processing vessel at a preset temperature of a plurality of levels, calibrating the model as discussed above for each temperature value (col. 10, lines 55-60).

5. Suzuki further teaches the heat treatment apparatus as discussed above, and further teaches that the thermal model has a function of estimating the temperature of the heaters using temperature sensors (S_{out}) as well as the temperatures of the temperature sensors (S_{in}) (col. 11, lines 1-5 and referring to the use of the measured values in the equation of col. 10 lines 64-65). The sensors S_{in} and S_{out} are both bases for the calibration method. S_{out} sensors are located closest to the heater. Correction values are determined as discussed above. Claim 9 is met during normal operation of the heat treatment apparatus and calibration method as discussed above.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 6-7, 11-12, 15-16, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (US PG Pub 2002/0014483 A1) in view of Muka (US 6193506).

8. Claims 6-7 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (US PG Pub 2002/0014483 A1) in view of Muka (US 6193506).

9. Regarding claims 6-7 and 21-22, Suzuki teaches the heat treatment apparatus and calibration method in which there are correction values calculated based on measured temperature of the heaters and temperature sensor readings as discussed above with respect to claims 1 and 9 (also see Suzuki col. 6, lines 55-60). Suzuki does not teach arranging a heater inside the processing vessel. Muka teaches arranging heaters (28) in several locations within the processing vessel, including both above and below the processing objects. It would have been obvious for a person of ordinary skill in the art at the time of the invention to combine the external (to the vessel) heating system of Suzuki with the internal heaters of Muka, because doing so would provide predictable results of precisely-controllable vessel and process object temperature by minimizing thermal gradient above and below the processing objects within the vessel. Additionally, the temperature sensors (S_{in},Swc and Swe) of Suzuki are already in position to measure temperatures of the heaters of Muka and as such will be used in the calibration method already described above (also Suzuki col. 10, lines 29-38). In this way the elements of Suzuki and Muka retain their original function when used together.

Claims 21-22 are met during normal operation of the heat treatment apparatus and calibration method discussed above.

Response to Arguments

Applicant's arguments filed 4/29/2008 have been fully considered but they are not persuasive. Applicant only argues that Suzuki fails to teach or suggest a method or calculation means for determining a correction value. As noted further in the rejection restated above, Suzuki teaches a heat treatment method and apparatus which teaches that when, during the calibrating process, the estimated temperature calculated from the thermal model and actual temperature read from the temperature sensors are different, the difference between the calculated and actual temperatures is minimized using the least squares method, which has terms broadly interpretable as correction values used to minimize difference between the fit and the actual data (col 9 ln 12-29).

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRET ADAMS whose telephone number is (571)270-5028. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571)272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edward Lefkowitz/
Supervisory Patent Examiner, Art Unit 2855

/BRET ADAMS/
Examiner, Art Unit 2855